

What is claimed is:

[c1] 1. A method of packaging electronic devices, comprising the steps of:

providing a cap wafer having a surface;

forming raised ridges on the cap wafer surface; and

bonding, at each raised ridge, said cap wafer surface to a substrate surface containing electronic devices.

[c2] 2. The method of claim 1, wherein said step of forming further includes lithographically forming said raised ridges at areas near the perimeter of a desired cavity region, so that said raised ridges are a contiguous part of said cap wafer.

[c3] 3. The method of claim 2, wherein each raised ridge is formed slightly inboard from the perimeter of a desired cavity region, each raised ridge having glass frit material printed thereon for bonding said cap wafer to said substrate.

[c4] 4. The method of claim 3, wherein each raised ridge is configured so as to utilize surface tension to hold the glass frit into a higher and thinner frit linewidth dimension, and prevent lateral flow of the low-viscosity frit, then if the frit were deposited directly on a flat cap wafer surface without lithographically formed raised ridges.

[c5] 5. The method of claim 4, wherein a linewidth of the frit is less than 125 μm .

[c6] 6. The method of claim 3, wherein said raised ridges are fabricated to any desired height, width and location on said cap wafer surface.

[c7] 7. The method of claim 1 wherein bonding areas when the raised ridges are bonded form a continuous perimeter around the device, so that a hermetic seal is formed.

[c8] 8. The method of claim 1, said step of forming further including the steps of:

trenching recesses into said cap wafer surface at areas near the perimeter of a desired cavity region;

printing material into said recesses and planarizing it such that each filled recess is flush with the cap wafer surface; and etching away the cap wafer surface, except for the areas of the original recesses, so that the material forms the raised ridges that are bonded to the substrate surface.

[c9] 9. The method of claim 8, wherein each raised ridge is formed slightly inboard from the perimeter of a desired cavity region, each raised ridge composed of a glass frit material for bonding said cap wafer to said substrate.

[c10] 10. The method of claim 9, wherein a linewidth of the frit is less than 125 μm .

[c11] 11. The method of claim 8, wherein, after said recesses are formed and the recesses are filled, said raised ridges are fabricated to any desired height, width and location on said cap wafer surface by etching the surrounding cap wafer surface surrounding each filled recess.

[c12] 12. The method of claim 8 wherein the ridges form a continuous perimeter around a cavity region such that a hermetic seal is made when the cap wafer is bonded to a wafer of an electronic device.